

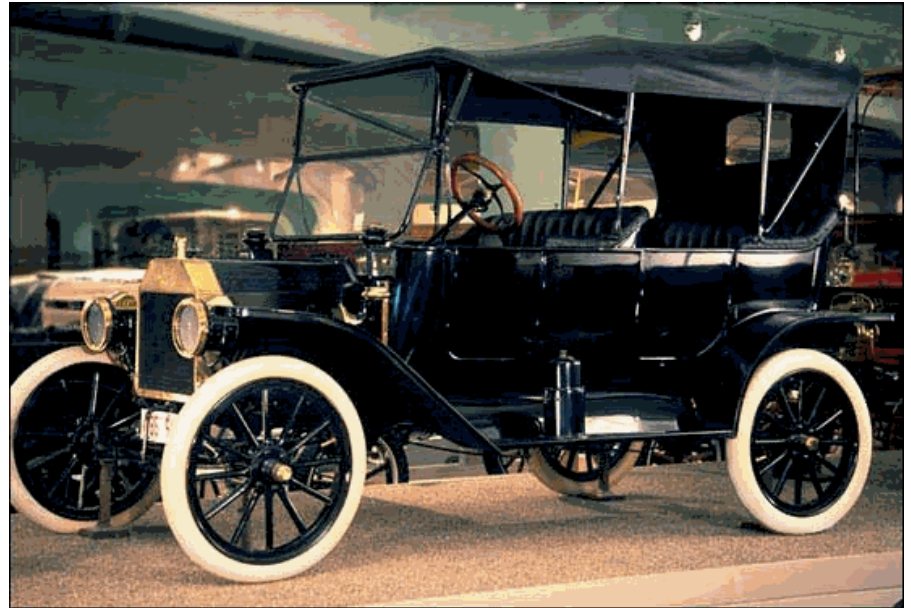


The Value of Alternative Analysis

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CSC Program Director
10/26/2012

Agenda

- What is an AoA
- What drives the need
- Reminisce on the good old days
- Why do one
- When to do one
- What should be done
- How to do it (framework)
- Kevinisms and were you paying attention?



A 1915 Model T Ford. From 1914-1926, you could have your choice of colors as long as it was **black!**

What Do We Mean By Alternative Analysis? (AKA Analysis of Alternatives or AoA)

HHSIRM-2003-0002, HHS Policy for Conducting Information Technology Alternatives Analysis

An evaluation of scenarios and design paths for meeting a general set of system design requirements described in a **Business Need Document**, or a specific technical/architectural issue. This evaluation presents alternatives, which include assessments of **current system** functionality and design that may satisfy some of the requirements as well as the functionality that may impact the interfaces with other systems. A set of evaluation criteria is used to **weight the various alternatives** against each other and **provide a recommendation** for the analysis.

OMB Circular A-11 Alternatives Analysis Definition

. . . an analysis of alternative approaches to address the performance objectives of an investment, performed prior to the initial decision to make an investment, and **updated periodically** as appropriate to capture changes in the context for an investment decision.



- **OMB Circular A-11, Part 7 (Section 300)**, *Policy for Planning, Budgeting, Acquisition, and Managing Federal Capital Assets*
 - Instructions on alternatives analysis budget justification and reporting requirements.
 - Effort to move organizations from a single alternative to the comparison of multiple alternatives.
 - Requires **at least three viable alternatives**, in addition to the current baseline (i.e., the **status quo**). These alternatives need to be presented in a table that shows:
 - Alternative analyzed
 - Description of alternative
 - Risk adjusted lifecycle costs estimate – the overall estimated cost over the life of the investment that has been adjusted to accommodate any risk identified
 - Risk adjusted lifecycle benefits estimate – projected benefits and costs for each viable alternative
- **Federal Cloud Computing Strategy**, Vivek Kundra, February 8, 2011
 - Cloud First policy – Agencies must evaluate secure cloud computing options before making new investments.
- **GSA IT Budget Submission Instructions**
 - Requests the quantitative and qualitative benefits be addressed (cost savings, stakeholder benefits, etc.) when evaluating total annual benefits for each alternative.

AoA Drivers (Continued)

•**Exhibit 53C**, “Agency Cloud Computing Portfolio,” which includes IT investment budget information by cloud computing deployment model and service model.

Cloud Computing Alternatives Evaluation specifies **whether, as of the date of the submission, a cloud alternative was evaluated for the investment or components/systems within the investment, per the Cloud First policy.** All investments should answer this question regardless of the overall lifecycle stage of the investment, as operational investments may consider performing such an evaluation during or as a result of an operational analysis. The evaluation should indicate one of the following answers:

1. The agency evaluated a cloud alternative and chose a cloud alternative for some or all of the investment.
2. The agency evaluated a cloud alternative but did not choose a cloud alternative for any of the investment.
3. The agency did not evaluate a cloud alternative but plans to evaluate a cloud alternative by the end of the BY.
4. The agency did not evaluate a cloud alternative and does not plan to evaluate a cloud alternative by the end of the BY.

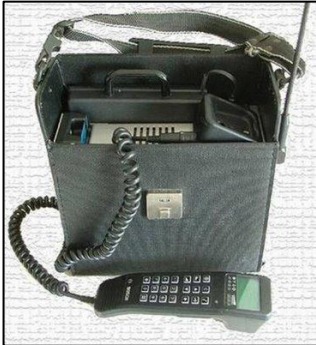
•**GAO Cost Estimating and Assessment Guide** (GAO-09-3SP)

More Drivers, the **Exhibit 300**

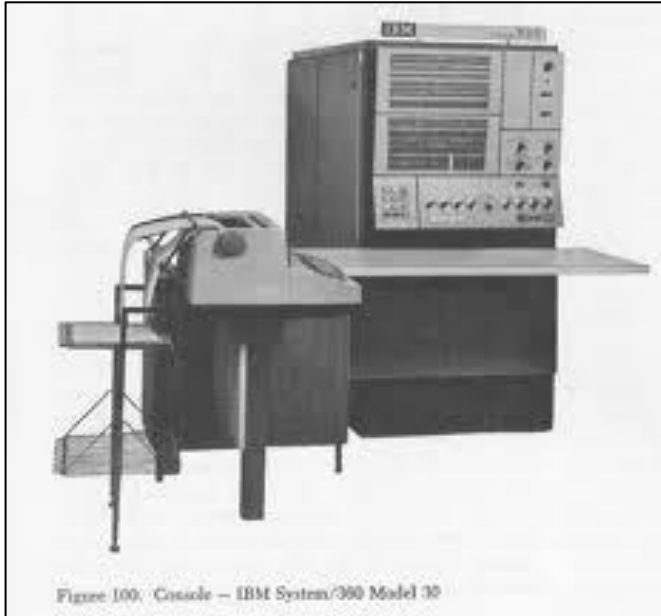
8. Does the investment include the following?	
	Check all that Apply
A shared service (intra-or inter-agency—current and/or planned)	[Yes/No]
A data center (current and/or planned)	[Yes/No]
PIV-enabled systems (per HSPD-12) (all systems currently PIV-enabled)	[Yes/No]
Cloud computing (current and/or planned)	[Yes/No]



So What has **Changed**?



The Times They are a **Changing**



IBM 360 30, Apr 1964. 64k storage.



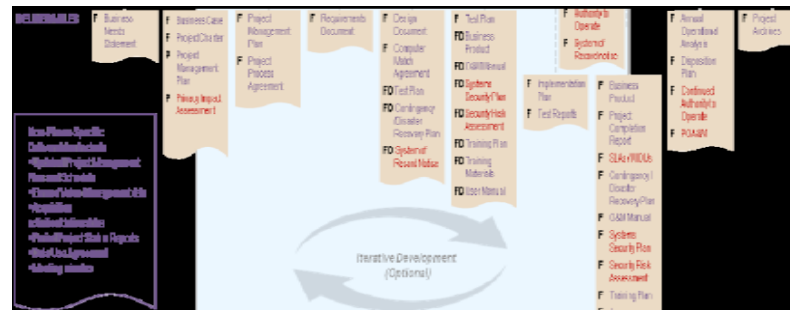
June 2012. IBM Sequoia packs about 1,572,864 processor cores with 1.6 petabytes (1.6m gigabytes) of memory. Sequoia perform 16.32 quadrillion calculations per second

Why Conduct an AoA on O&M Investment

- More cost effective alternatives
- Validate that the current solution is still the best solution
- Newer technologies (hardware and software)
- New or enhanced business requirements or drivers
- Changing strategic mission or vision of program
- Reduction of risks
- Increase performance
- Enhance security
- New shared service
- Cloud alternative
- Users unhappy



When to Conduct an AoA



From an EPLC Perspective:

Concept phase: “Explore alternative concepts and methods to satisfy the need.” “Ascertain that the Alternatives Analysis considers the use of existing systems and/or GOTS/COTS products.” (EPLC Framework v1.4 pg. 31) (complete by **Planning** phase)

O&M Phase” “The **Annual Operational Analysis** assists in the analysis of alternatives for deciding on new functional enhancements and/or modifications to the business product. (pg. 66).

Alternatives that Must be Included

- Current status quo (do nothing – current baseline),
- Integration (partial replacement),
- Interfacing (output hand-offs and add ons),
- New system (new requirements or full replacement of old system), and
- Duplicative efforts (similar systems exist).

*If any of the alternatives listed above are not applicable, the study will include a statement to that effect along with an explanation. Additional alternatives may be required (e.g., if there is more than one system integration option or if there are substantially different options for the scope, technical approach, or other aspect of a new system).



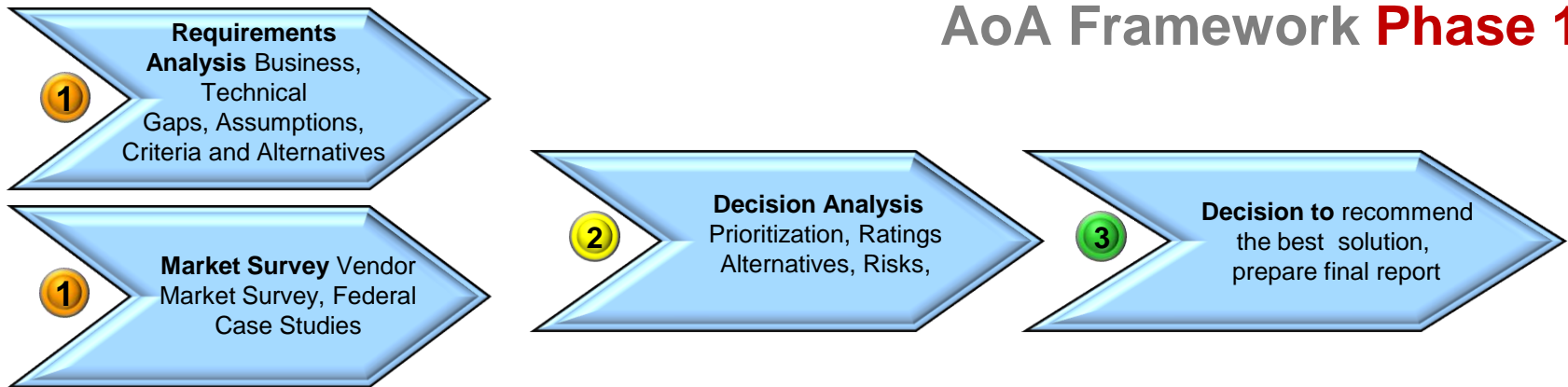
* HHS Policy, pg 6

The AoA Framework

- The framework is the specific methodology and approach that will be used to successfully conduct the AoA.
- The framework needs to be robust to address the complexity of the analysis but also flexible to address some unique needs.
- There are two phases to the AoA:
 - **Phase I** – The goal is to inform a decision on the most feasible alternative that best meets all the decision criteria.
 - **Phase II** – The goal is to conduct detailed analysis and create a project plan on the selected alternative to come up with a cost estimate and a baseline project plan.



AoA Framework Phase 1



1 Requirements Analysis – Key Tasks	2 Decision Analysis - Key Tasks	3 Decision - Key Tasks
<ul style="list-style-type: none"> a. <u>Literature Review</u> (e.g., Assessments, AoA Template, Analysts Reviews) b. <u>Stakeholder Interviews</u> c. <u>Technologies</u> (e.g., COTS, GOTS, Emerging Technologies) d. <u>Analysis</u> (e.g., Business Requirements, Technical Requirements, Stakeholder Analysis) e. <u>Market Survey</u> (e.g., Lessons Learned, Case Studies, Vendors) 	<ul style="list-style-type: none"> a. <u>Conduct Initial Prioritization of Solutions</u> b. <u>Develop Baseline</u> c. <u>Risk Analysis</u> (e.g., Risk of Alternatives, Operational Risk, Financial Risk, Technical Risk, Cognitive Bias, Group Think, Blindside Surprise) d. <u>Scenario Analysis</u> e. <u>Additional Alternative</u> – If necessary f. <u>Techniques</u> (e.g. Statistical Methods, Regression, Bayesian Network, LaPlace Plus One, Good-Turing) 	<ul style="list-style-type: none"> a. <u>Develop the Final Three Prioritized Solutions</u> b. <u>Conduct Cost Benefit Analysis</u> – (e.g. NPV, ROI) c. <u>Present Pros and Cons of the Top Three Alternatives</u> d. <u>Recommend the Best Solution</u> e. <u>Develop a Project and Risk Mitigation Plan for the Selected Solution</u> f. <u>Prepare Final Reports</u> (Next Slide)

The AoA Phase 1 Report

1. SYSTEM OVERVIEW

2. ALTERNATIVES

A. Description

B. Criteria. Use a scale of 1 to 10 with 10 being highly favorable. (Sample next slide)

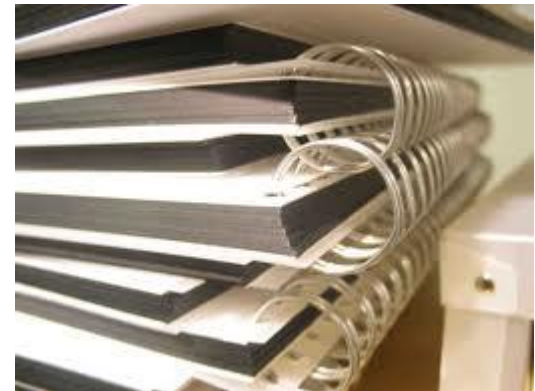
Weighted

- i. **Mission.** The elements of the OPDIV mission to be supported (i.e., business needs).
- ii. **Requirements.** Specific requirements that the new project must support.
- iii. **Schedule.** Phasing, durations and milestones.
- iv. **Cost.** Full life-cycle costs to include design, development, testing, training, migration, implementation, and operations and maintenance both in total and by fiscal year.
- v. **Security.** Conformance with government and industry security standards.
- vi. **Risk.** Assessment of cost, schedule, security, technical, and overall risk.
- vii. **Enterprise Compliance.** Conformance with the HHS enterprise approach to IT management (architecture, standards, licenses, migration strategies, etc.).

3. TRADE – OFF ANALYSIS

- A. • Establishing weighted scores for each alternative
- B. • Selecting alternatives for final comparison.
- C. • Comparison of alternatives.

4. RECOMMENDATIONS



Sample Phase 1 **Weighted Score**

FIGURE A: SAMPLE WEIGHTED-SCORE ANALYSIS

CRITERIA	WEIGHT	ALTERNATIVES From slide 11									
		CURRENT		INTEGRATION		INTERFACING		NEW		DUPLICATIVE	
MISSION	100	400	4	600	6	700	7	900	9	600	6
REQUIREMENTS	90	180	2	360	4	630	7	900	10	630	7
SCHEDULE	60	600	10	480	8	420	7	300	5	360	6
COST	70	700	10	490	7	280	4	140	2	350	5
SECURITY	80	80	1	240	3	400	5	720	9	560	7
RISK	70	210	3	350	5	420	6	630	9	280	4
ENTERPRISE COMPLIANCE	90	90	1	360	4	360	4	720	8	270	3
TOTAL WEIGHTED SCORE		2,260		2,880		3,210		4,310		3,050	

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From Slide 14



Cost Considerations

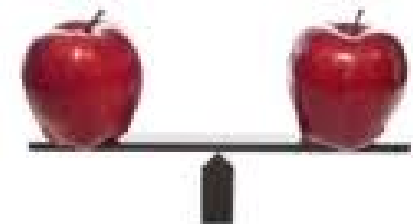
1. Net Present Value of the total cost of ownership over 10 years.
2. Software licensing and annual maintenance.
3. Implementation
4. Training and documentation
5. Hosting
6. Help Desk
7. Security & Privacy
8. Hardware procurement and replacement cycles
9. Contracts
10. IV&V
11. Staff (including travel)
12. Interfaces systems/data exchange fees
13. Intangible (disruption to program and users)
14. Risk analysis/mitigation



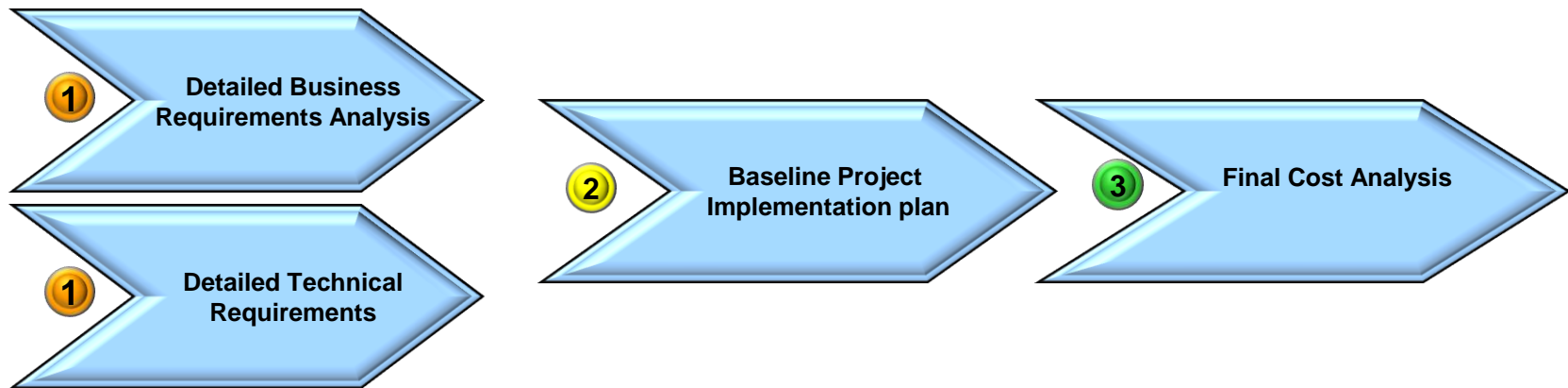
Sample **Cost** Comparison

Solution	Recurring Costs	Non-Recurring Costs	Total Cost (10 Year)	Net Present Value Cost (10 Year)
Government/Internally Hosted Solutions				
Current	\$ 22,668,675	\$ -	\$ 22,668,675	\$ 21,434,158
GOTS 1	\$ 24,300,582	\$ 13,749,800	\$ 37,600,382	\$ 36,076,812
GOTS 2	\$ 28,506,452	\$ 21,594,250	\$ 50,100,702	\$ 48,280,339
GOTS 2	\$ 24,300,582	\$ 8,045,000	\$ 32,345,582	\$ 30,851,095
GOTS 4	\$ 30,168,091	\$ 8,025,005	\$ 40,011,370	\$ 38,024,451
GOTS 5	\$ 28,083,293	\$ 4,553,300	\$ 33,098,678	\$ 31,373,824
GOTS 6	\$ 22,490,009	\$ 8,005,788	\$ 31,110,058	\$ 29,692,471
GOTS 7	\$ 24,350,582	\$ 4,160,700	\$ 29,034,476	\$ 27,531,632
Vendor/Third Party Solutions				
COTS 1	\$ 5,968,259	\$ 8,667,100	\$ 23,905,759	\$ 22,936,138
COTS 2	\$ 16,620,687	\$ 7,280,500	\$ 41,339,061	\$ 39,366,080
COTS 3	\$ 15,181,228	\$ 4,553,300	\$ 20,196,613	\$ 19,241,544

←What is this?



AoA Framework **Phase 2**




1 Requirements Analysis – Key Tasks	2 Baseline Project Plan - Key Tasks	3 Final Cost Analysis - Key Tasks
<ul style="list-style-type: none"> a. Detailed Business Requirements b. Detailed Technical Requirements c. Use Cases 	<ul style="list-style-type: none"> a. Effort Estimates for Each Applicable EPLC Phase b. Resource estimates for the effort c. Cost estimates for the implementation d. Baseline Project Plan 	<ul style="list-style-type: none"> a. Cost Components b. Cost Analysis c. Benefit Components d. Cost Analysis

- If the system's an oldie, the solution is moldy, if it not 10 or under...
 - Will you think, hmmm I wonder...?
- Users are unhappy and the system runs slow...
 - Perhaps in a new direction you should go
- The mission evolving or expectations not met...
 - Another solution consider to get
- Too expensive to keep 'er or need something cheaper
 - New technologies abound, can the cloud make you sound?
- Requirements not met, security too weak, risks are a plenty, and costs tend to creep...
 - Time to look to the future, where all options reside, be a hero not zero, do an AoA, save your hide!

*Pearls of
Wisdom*



A black and white photograph of the U.S. Capitol dome, showing its ornate architecture and the Statue of Liberty on top.

Why are we doing this?
What problem are we solving?
Is this actually useful?
Are we adding value?
Will this change behavior?
Is there an easier way?
What's the opportunity cost?
Is it really worth it?



Thank You
What are your questions?

A graphic with a background of colorful balloons (red, yellow, green, blue) and the text 'It's A Giveaway Alert!!!' in a black serif font.

It's A
Giveaway
Alert!!!

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